N2 Number Properties

Knowledge Organiser

Keywords

Standard Form – When a very big or very little number is written in two parts

Indices –how many times to use the number in a multiplication, it is written as a small number above the base number

Prime Number – a whole number above 1 that can **not** be made by multiplying other whole numbers

Factor – numbers we can multiply together to get another number

Multiple – the result of multiplying a number by an integer

HCF – highest common factor

LCM – lowest common multiple

Formulae/Key Facts

Laws of indices

multiplication	$n^a \times n^b = n^{a+b}$	(add powers)
division	$n^a \div n^b = n^{a-b}$	(subtract powers)
power of a power	$(n^a)^b = n^{a \times b}$	(multiply powers)
zero power	$n^0 = 1$	(always equals 1)

Standard Form:

Any integer

Any number between 1 and less than 10

$$A \times 10^n$$

Example

3.2×10^4

$= 3.2 \times 10 \times 10 \times 10 \times 10$

$= 32000$

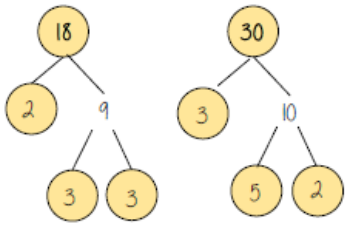
Non-example

0.8×10^4

$5.3 \times 10^{0.7}$

Examples

Product of primes

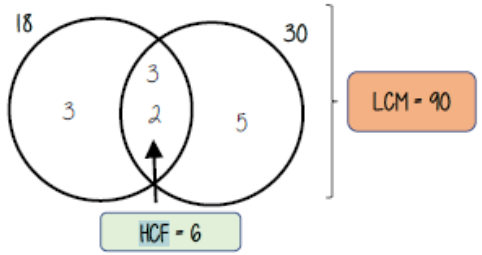


Written in index form

$18 = 2 \times 3^2$

$30 = 2 \times 3 \times 5$

Find the HCF and LCM of 18 and 30



Multiplication and division

$\frac{1.5 \times 10^5}{0.3 \times 10^3}$ ← Division questions can look like this

$(1.5 \times 10^5) \div (0.3 \times 10^3)$

$1.5 \div 0.3 \times 10^5 \div 10^3$

$= 5 \times 10^2$

For multiplication and division you can look at the values for A and the powers of 10 as two separate calculations

Revisit addition and subtraction laws for indices – they are needed for the calculations

Addition law for indices: $a^m \times a^n = a^{m+n}$

Subtraction law for indices: $a^m \div a^n = a^{m-n}$

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